

## Using Electrocoagulation in Seawater Desalination System \*

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### Abstract

Fresh water shortage problem is the most important difficulty that counters agricultural and industrial improvement strategies on both Arabic and international levels, where Arabian region extends along vast arid and semi- arid areas, and mostly lacks for fresh water resources. Therefore, desalination choice has become an inevitable option to compesate deficiency of water, especially with the long Arabian costal line, where desalinated seawater is considered renewable fresh water resource.

However, desalination mechanism requires water pretreatment procedures in order to reduce total hardness and pH values, to prevent salts precipitations which hinder thermal and membrane techniques.

This research studies the ability of electrocoagulation usage as an electrochemical pretreatment to reduce both total hardness and pH of the feed water. The results demonstrated. That using 8 stainless steel electrodes with bipolar system, 5 A current intensity , 15 min retention time , and 3 h sedimentation time, can achieve 41.6 % total hardness removal rate, and pH reduction from 8.10 to 6.22 without any acidic addition.

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**Keywords:** seawater desalination, electrocoagulation, pH reduction, total hardness removal.

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For the Paper in Arabic see pages (393-403)

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